



PREVALENCE OF ASYMPTOMATIC AND SYMPTOMATIC DEEP VEIN THROMBOSIS IN PATIENTS ADMITTED WITH ACUTE STROKE

Dr. Pankaj*	Senior Resident Neurology, Govt. Medical College Kota *Corresponding Author
Dr. Vijay Sardana	Senior Professor and principle & controller , Govt. Medical College Kota.
Dr. Dilip Maheshwari	Professor neurology, Govt. Medical College Kota.
Dr. Bharat Bhushan	Assistant professor Neurology, Govt. Medical College Kota.

ABSTRACT

Introduction: Deep vein thrombosis (DVT) is a serious complication in stroke patients and may lead to pulmonary embolism and increase risk of mortality Prevalence of Asymptomatic DVT and symptomatic DVT is 2-10% and 10-15% respectively after an acute stroke **Aim** Prevalence of asymptomatic and symptomatic deep vein thrombosis in patients admitted With acute stroke Identification of risk factors that determine the necessity of anticoagulation in patients with acute stroke **Material and method** This was a cross sectional – hospital based prevalence study conducted on 100 consecutive stroke patients. Patients with persistent hypotonia and power < 3/5 were screened for the presence of DVT of the paralysed limb with ultra sound venous colour flow doppler on day of admission and day 14. A statistical analysis was performed using SSPS package. P value < .05 was considered significant. **Result:** Prevalence of DVT in acute stroke patients in our study was 9% Patients with higher NIHSS score , uncontrolled diabetes, raised CRP level, LDL and homocystein level are risk factor for DVT in stroke and we did not find any significant correlation between HTN, alcohol and smoking and occurrence of DVT **Conclusion:** In order to identify deep vein thrombosis early, a duplex USG is an effective tool. In spite of low incidence of asymptomatic DVT in our study, it is still necessary to screen those stroke patients with power below 3 and those with high risk factors, to avoid morbidities (pulmonary embolism and proximal extension, symptomatic DVT).

KEYWORDS :

INTRODUCTION

Deep vein thrombosis (DVT) is a common but complication in stroke patients and may lead to pulmonary embolism and increase risk of mortality.

Prevalence of Asymptomatic DVT and symptomatic DVT is 2-10% and 10-15% respectively after an acute stroke^{1,4} risk of DVT after acute stroke peaks between days 2 and 7; if left untreated, mortality risk is approximately 15%⁵. The risk of complications i.e DVT/pulmonary embolism are higher in patients with SAH and ICH and low in transient ischemic attack (TIA)⁶.

Incidence of pulmonary embolism after first few month of stroke is 1-3% and is most common cause of mortality^{1,4}.

The risk factors for DVT in acute stroke are advanced age, high national institute of health stroke scale (NIHSS) score, hemiparesis, immobility, female gender, atrial fibrillation, receipt of intravenous or intra-arterial tissue plasminogen activator (TPA)^{7,9}, ultrasound due to its accuracy, low cost is initial test of choice for diagnosing peripheral venous thrombosis¹⁰ In patients with hemorrhagic stroke, anticoagulation is associated with a reduce risk of complications and a non-significant increase in hematoma enlargement¹¹.

AIMS & OBJECTIVES

- Prevalence of asymptomatic and symptomatic deep vein thrombosis in patients admitted With acute stroke
- Identification of risk factors that determine the necessity of anticoagulation in patients with acute stroke

MATERIALS & METHOD

Study sample:100

Study design: cross sectional – hospital based prevalence study.

Inclusion criteria:

- Patients with acute stroke of less than two weeks duration.
- Recovery of power from admission till the end of study period less than 3/5.
- Patients with or without known history of diabetes mellitus, systemic hypertension.
- Patients with risk for accelerated atherogenesis such as smoking or alcoholism

Exclusion criteria:

- Duration of stroke more than two weeks.
- Recovery of power from time of admission to screening for DVT is more than 3/5.
- Pregnancy.
- Patients on treatment with drugs like aspirin, oral contraceptive pills or anticoagulants.
- Patients with previously known underlying procoagulant states.
- Patients with underlying connective tissue diseases

METHODOLOGY

100 consecutive patients admitted with acute stroke of less than two weeks in our hospital, were screened preliminarily with ultra sound venous colour flow doppler on day of admission and day 14 Patients who had developed DVT despite intensive physiotherapy were treated with leg elevation, graded compressive stockings and LMWH..

RESULTS

Table 1 mean age of patients

	DVT present	DVT absent	P value
Age	56.55± 16.62	58.31 ±13.93	0.7226

Table 2 Correlation of mean NIHSS score with occurrence of DVT

	DVT present	DVT absent	P value
NIHSS score	24.22±9.16	13.03±5.74	0.0001

Table 3 Correlation of mean HbA1c level with DVT

	DVT present	DVT absent	P value
HbA1c	6.87 ± 1.42	5.69 ± 0.655	0.0001

Table 4 Correlation of hyperhomocysteinemia with DVT

Hyperhomocysteinemia	DVT present	DVT absent	P value
Present	4	11	0.027
Absent	5	80	

Table 5 Association of atrial fibrillation with DVT

Af	DVT present	DVT absent	P value
Present	3	5	0.0229
Absent	6	86	

Table 6 Correlation of mean CRP level with DVT

	DVT present	DVT absent	P value
CRP	11.77 ± 4.26	6.274 ± 1.2	0.0001

Table 7 Correlation of mean LDL level with DVT

	DVT present	DVT absent	P value
LDL	102.88 ± 30.09	89.25±16.01	0.0288

DISCUSSION

Stroke is major medical illness which leads to complications like deep vein thrombosis and pulmonary embolism. And these complication usually develops in first 2 weeks. Due to reduced level of consciousness in patients of stroke its usually difficult to diagnose DVT and daily clinical examination examination of patients is required to early diagnosis of DVT in stroke patient.

In our study out of 100 patients incidence of deep vein thrombosis was 9 % among them 6% were symptomatic and remaining were asymptomatic. This result were similar to study performed by bembenek et al¹² at poland in which 10.7% of stroke patients were complicated by DVT. Asian population is less prone for DVT. Study by ten et al¹³ risk of DVT 2.4% within the first week, reaching 4.8% within the first month poststroke. De silva et al¹⁴ found the incidence of DVT in 30% of patient in asian population. In our study mean age of patients having DVT approximately similar to non DVT patients and no gender difference was found. This may be probably attributed to as distribution of age in our study population among the the two groups were comparable hence the difference cannot be clearly attributed as a risk factor. Similar results were found by Jan p et al¹⁵ in some studies older patients were more vulnerable to DVT after stroke Sun et al¹⁶ found DVT more frequent (28.0%) in the patients ranging 60-70 years probably because of having more risk factor for thrombotic disease.

In our study no significant difference was found in patients of ischemic stroke and intracerebral hemorrhage having DVT probably because of similar risk factors and better physiotherapy in form limb mobility was provided among both the groups. But in most of other studies presence of hemorrhagic stroke was an independent risk factor for DVT than ischemic stroke patients Gregory and Kuhlemeier et al¹⁷ Skaf et al¹⁸ observed increased rate of thrombotic complication in patients of hemorrhagic stroke probably because of antiplatelets and anticoagulants use in ischemic stroke patients.

In our study patients with DVT have higher mean (NIHSS score =24) than non DVT patients (NIHSS score=13) which was statistically significant Ogata et al¹⁹ shows increased risk of DVT in patients with higher degree of neurological deficit and more severe consciousness disturbances (measured in NIHSS) Jan p et al⁴ revealed higher NIHSS score in the patients with DVT (median 6.5 vs 5.0).

Many studies i.e Reiter et al²⁰ shows that higher risk of DVT in patients who have systemic inflammation and having raise CRP level which is consistent with our study mean CRP in DVT patients was 11.77 with statistically significant p value

(0.0001). In our study we found a statistically significant correlation between presence of atrial fibrillation and occurrence of DVT in stroke patients p value (.0229)

Noel et al²¹ found higher risk of thromboembolic events in patients with AF because of poor hemodynamic circulation associated with AF as the main risk factor for deep venous thrombosis and AF is independent risk factor for pulmonary embolism DVT and stroke. In our study we found a significant correlation between higher level of LDL and DVT in stroke patients . Study by Ben Brik a et al²² shows the mean value of the total cholesterol (tc), the ldl-c, lipoprotein lp (a), and apo-b were statistically higher in the VTE group compared to control group respectively; tc (4.942 ± 1.409 vs. 4.362 ± 0.872 mmol/l, p=0.049), ldl-c (3.114 ± 1.100 vs. 2.602 ± 0.695 mmol/l, p=0.001), lp (a) (0.205 ± 0.115 vs. 0.0819 ± 0.0479 g/l, p we found raised homocysteine is associated with increased risk of DVT in stroke patients p value (.02) Martin Den heijer et al²³ found similar result in their study of 269 patients we found that diabetic patient having higher mean HbA1C had increased risk of DVT than patients with lower mean HbA1C p value (0.0001). Study by Weil Sheng Chung et al²⁴ found that T2DM patients exhibited a 1.44-fold adjusted hazard ratio (AHR) of VTE development compared with the controls (95 % confidence interval [CI] = 1.27–1.63). The risks of DVT and PE were greater in the T2DM than those in the controls.

In our study we did not find any significant correlation between HTN, alcohol and smoking and occurrence of DVT similar results were found by Bembenek et al²³.

CONCLUSIONS:

The prevalence of DVT in acute stroke patients in our study was 9% (6% symptomatic and 3% asymptomatic). In order to identify deep vein thrombosis early, a duplex USG is an effective tool. Patients with higher NIHSS score , uncontrolled diabetes, raised CRP level, LDL and homocystein level are risk factor for DVT in stroke so anticoagulant should be considered at least in these patients for prophylaxis.

In spite of low incidence of asymptomatic DVT in our study, it is still necessary to screen those stroke patients with power below 3 and those with high risk factors, to avoid morbidities (pulmonary embolism and proximal extension, symptomatic DVT). The use of routine anticoagulation in all stroke patients in our population requires further large scale trials before their benefits could be conclusively proven.

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